

Updated March 28, 2014

Jefferson County
Natural
Resources
Conservation
Service Strategic
Plan

2011 - 2016

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Section 1: Introduction

This Natural Resources Long Range Strategy lays out a road map for the Natural Resources Conservation Service (NRCS) and its conservation partners to effectively address some of the most important and urgent natural resource problems facing Jefferson County. The purpose of the strategy is to identify priority resource problems, describe desired future outcomes, and establish measurable objectives so that NRCS and its partners can focus financial and technical assistance to achieve measurable and meaningful outcomes.

This Natural Resource Long Range Strategy covers the period from 2011 – 2016. The strategy will serve as the guiding document for NRCS decisions regarding delivery of financial and technical assistance and administration of conservation programs. This is a living document, intended to be updated and modified, as appropriate, to account for emerging issues.

During the summer of 2010, the NRCS Jefferson Field Office conducted Strategic Conservation Community Meetings to gather input for the development of this document. During these special local work group meetings, NRCS and its partners identified natural resource problems facing Jefferson County and prioritized these problems based on the importance of each and our ability to treat them given current knowledge and technology.

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Similar meetings were held in 2012 and 2013 to update the resource issues if needed and discuss priorities and progress. Water quantity and irrigation water efficiency, rangeland condition and invasive species and forest health were again identified as key issues.

Vision: Productive lands- healthy environment

Mission: Helping people help the land. To build alliances and strategically invest financial and technical resources to solve natural resource problems in Jefferson county

Purpose: The purpose for this document is to provide a strategic approach to on-going and emerging conservation activities in Jefferson County, in order to effectively and efficiently address the resource concerns and challenges in the 21st Century.

Time Frame: The time frame covered by the plan begins January 2011 and end December 2016

.Partners Involved: NRCS gratefully acknowledges the assistance of the following partners in the development of this document.

- USDA NRCS
- Jefferson County SWCD
- Oregon Department of Agriculture (ODA)
- Oregon Department of Forestry (ODF)
- Oregon Watershed Enhancement Board (OWEB)

- North Unit Irrigation District (NUID)
- Oregon State Univ. Extension
- Wyeast Resource Conservation and Development Council (RC&D)
- USDI Bureau of Reclamation (BOR)

Section 2: Natural Resource Inventory

This section provides baseline information about the resource challenges facing Jefferson County. This section addresses human, soil, water, air, plant, animal, and energy resource concerns that will impact conservation and development activities in future years.

A resource concern is an expected degradation of the soil, water, air, plant, or animal resource base to an extent that the sustainability or intended use of the resource is impaired. Because NRCS quantifies or describes resource concerns as part of a comprehensive conservation planning process that includes client objectives, human and energy resources are considered components of the resource base. This section shows the natural resource inventory organized into Major Resource Concerns that include

- Soil Erosion
- Soil Quality Degradation
- Excess / Insufficient Water
- Water Quality Degradation
- Degraded Plant Condition
- Inadequate Habitat for Fish and Wildlife
- Livestock Production Limitation
- Inefficient Energy Use
- Air Quality Impacts

Major Resource Concerns are further broken down into 31 natural resource concerns.

Many of these resource concerns have been identified by agency and stakeholder resource inventories and management plans, including but not limited to:

Management Plan	Agency
NRCS Rapid Watershed Assessment Profiles: <ul style="list-style-type: none"> • Lower Deschutes - 17070306 • Trout – 17070307 • Upper Deschutes – 17070301 • Lower Crooked – 17070305 	Natural Resource Conservation Service
Soil Survey: <ul style="list-style-type: none"> • OR666 Trout Creek-Shaniko Area 	Natural Resource Conservation Service

• OR620 Upper Deschutes River Area	
Jefferson Field Office Technical Guide	Natural Resource Conservation Service
Middle Deschutes Agriculture Water Quality Management Area Plan	Jefferson Soil & Water Conservation District, Oregon Dept. Agriculture
Jefferson County Rural Living Handbook	Jefferson Soil and Water Conservation District
Wy'East Resource Conservation & Development Area Plan	Wy'East Resource Conservation & Development Council
Deschutes Subbasin Plan	Northwest Power and Conservation Council
Oregon Department of Fish and Wildlife (ODFW) Conservation Strategy	Oregon Department of Fish and Wildlife

The NRCS Subbasin Profiles provide a natural resource snapshot and overview of each Oregon 8-Digit Hydrologic Unit or watershed. The Subbasin Profiles organize into one document, information that local conservationists, landowners and others can use to identify conservation opportunities and direct technical and financial resources to the appropriate subbasin. They provide a concise description of the sub-basins' natural resources, resource concerns, conservation needs, and ability to resolve natural resource issues. These profiles organize into one document what most local conservationists and landowners already know about their watersheds.

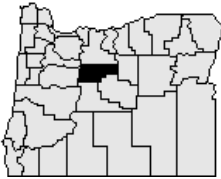
Physical resources, land use and land cover, common resource areas, soils, stream, precipitation data, resource concerns, census and social data.

NRCS published the Watershed Profiles based on the HUC. The 8-digit HUC watersheds within Wasco County include:

- Lower Deschutes - 17070306
- Trout – 17070307
- Upper Deschutes – 17070301
- Lower Crooked – 17070305

Source: <http://www.or.nrcs.usda.gov/technical/watershed-resources.html>

Resource Concern: Humans



Jefferson County is located on the east side of the Cascades in central Oregon. The population is approximately 21,720 with the largest population centers being Madras, Culver and Warm Springs.

Source: <http://bluebook.state.or.us/local/counties/counties16.htm>

About

Population (2009): 22,715

Established: Dec. 12, 1914

Elev. at Madras: 2,242'

Area: 1,791 sq. mi.

Average Temp.: January 37.4° July 70.1°

Assessed Value: \$1,437,148,710

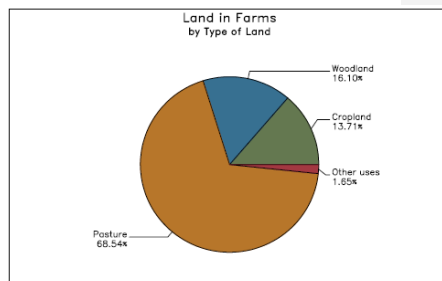
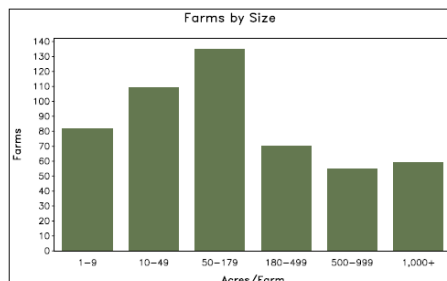
Real Market Value: \$2,583,984,356

Annual Precipitation: 10.2"

Economy: Agriculture: Vegetable, grass and flower seeds, garlic, mint and sugar beets are cultivated on some 60,000 irrigated acres. Jefferson County also has vast acreages of rangelands and a healthy industrial base related to forest products. The Warm Springs Forest Products Industry, a multi-million dollar complex owned by the Confederated Tribes of the Warm Springs Reservation—partially located in the northwestern corner of the county—is the single biggest industry. With 300 days of sunshine and a low yearly rainfall, fishing, hunting, camping, boating, water-skiing and rock hunting are popular recreations.

Number Types & Size of Farms. The data included in this section is from the **2007 Census of Agriculture**. The following is a quick profile of Jefferson County agriculture and producers. Jefferson County land in farms comprises approximately 708,974 acres. The average size farm is 1,390 acres with the median size farm 92 acres. For more information see Types and Size of Farm Operations on the next page.

Jefferson County Farms			
	2007	2002	% Change
Number of Farms	510	428	+19
Land in Farms	708,974	701,440	+1
Average Size of Farm	1,390	1,639	-15



All Sources Above:

http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Oregon/cp41031.pdf

Types and Size of Farm Operations

The Economic Research Service has established a typology of farms to group farms by similar characteristics.

Large family farms have market value of agricultural products gross sales between \$250,000 and \$499,999 and the principal operator who reports his/her occupation as being primarily farming. There are 19 farms and 70,492 acres.

Nonfamily farms are farms organized as nonfamily corporations, as well as farms operated by hired managers. There are 31 farms and 343,670 acres.

Small Family Farms, Farming Occupations/Higher Sales have market value of agricultural products gross sales between \$100,000 and \$240,999 and the principal operator who reports his/her occupation as being primarily farming. There are 29 farms and 29,086 acres.

Small Family Farms, Farming Occupations/Lower Sales have market value of agricultural products gross sales of less than \$100,000, and the principal operator who reports his/her occupation as being primarily farming. There are 88 farms and 71,515 acres.

Small Family Farms, Limited-Resource have a market value of agriculture products sold gross sales of less than \$100,000, and the total principal operator household income of less than \$20,000. There are 73 farms and 28,021 acres.

Small Family Farms, Residential/lifestyle have market value of agricultural products gross sales of less than \$100,000, and the principal operator who reports his/her occupation as other than farming. There are 115 farms and 16,974 acres.

Small Family Farms, Retirement have market value of agricultural products gross sales of less than \$250,000, and the total principal operator who reports being retired. There are 128 farms and 34,567 acres.

Jefferson County Farm Operations 2007 Census of Agriculture	
Data Item	Value
Large Family Farms – Acres	70,492
Large Family Farms – Number of Operations	19
Non family farms – acres	343,670
Non family farms – Number of Operations	31
Small Family Farms, Farming Occupations/Higher Sales – Number of Acres	29,086
Small Family Farms, Farming Occupations/Higher Sales – Number of Operations	29
Small Family Farms, Farming Occupations/Lower Sales – Acres	71,515
Small Family Farms, Farming Occupations/Lower Sales – Number operations.	88
Small Family Farms, Limited-Resource – Acres	28,021
Small Family Farms, Limited-Resource – Acres – Number of	73
Small Family Farms, Residential/lifestyle – Acres	16,974
Small Family Farms, Residential/lifestyle – Number of operations	115
Small Family Farms, Retirement – Acres	34,567
Small Family Farms, Retirement – Number of Operations	128
Source: http://quickstats.nass.usda.gov/?source_desc=CENSUS	

Jefferson County Overview

Principle industries are agriculture, forest products, and recreation. The fertile North Unit Irrigation District in the central part of the county produces seed, potatoes, hay, and mint. The eastern part of the county has dry wheat farming and grazing land for cattle, and the western part is timber country.

Elevation ranges from about 1500 ft to over 10,000 ft at the crest of the Cascade Mountains with Madras and most of the cropland at 2-3 thousand ft. Annual precipitation varies from 9 inches in the low lands to about 25 inches at the higher elevations.

The Warm Springs Forest Product Industry owned by the Confederated Tribes of the Warm Springs Reservation is the single largest industry. The reservation is located on portions of land in four counties including 236,082 acres in the northwestern corner of Jefferson County.

The County owes much of its agricultural prosperity to the arrival of the railroad in 1911 and to the development of irrigation projects in the late 1930s. The railroad, linking Madras with the

Columbia River, was completed after constant feuds and battles between two lines working opposite sides of the Deschutes River.

Jefferson County has 1,139,701 acres of which 570,000 ac. are private and 257,000 ac are Tribal lands. The USDA Forest Service owns 276,000 ac including 120,000 ac of the Crooked River National Grassland and 156,000 ac of forest. USDI Bureau of Land Management has about 37,000 ac. There are about 97,000 ac of crop land with about 52,000 acres irrigated. Much of the irrigated land is used to produce high value seed crops including 85% of the nation's carrot seed. Parsley, radish, coriander, garlic, onion and flowers are also grown for seed. The vegetable seeds are often grown in rotation with hay, grain, grass seed or mint.

Jefferson has 510 farms, up from 428 in 2002 so the average size of farms is getting smaller. The county saw an increase in population during the 1990's but there is less development pressure than in some other areas. The number of large farms (over 1000 ac) and the number of small farms (less than 50 ac.) both grew so commercial farms are getting larger and some land is being subdivided into small farms. Census data shows 17% of population as Hispanic origin but only 18 out of over 400 operators identified themselves as Hispanic.

Land Use

Jefferson County covers an area of 1,791 square miles.

Jefferson County Land Use (private land)	
CROPLAND - ACRES	39,857
CROPLAND - NUMBER OF OPERATIONS	849
IRRIGATED - ACRES	37,821
IRRIGATED - NUMBER OF OPERATIONS	1,215
PASTURELAND - ACRES	88,567
PASTURELAND - NUMBER OF OPERATIONS	1,096
Includes rangeland	
WOODLAND - ACRES	4,629
WOODLAND - NUMBER OF OPERATIONS	139
Includes natural or planted woodlots	
WOODLAND, PASTURED - ACRES	8,407
WOODLAND, PASTURED - NUMBER OF OPERATIONS	215
Includes woodland used for pasture or grazing.	
ORGANIC - ACRES	--

Jefferson County Land Use (private land)	
ORGANIC - NUMBER OF OPERATIONS	2
Source: NASS Census Of Agriculture 2007	

Tribes & Treaty Rights

All of Jefferson County is within the Ceded lands of the Confederated Tribes of Warm Springs and their reservation includes 257,000 ac of the county. The Confederated Tribes are comprised of the Wascos, Tenino and Northern Paiute peoples. Prior to the reservation, the Wascos tended to concentrate near the Columbia River, the Tenino people ranged farther south and east up the Deschutes and John Day rivers and the Paiute still farther south into the Great Basin.

Resource concern: Soils

The Natural Resources Conservation Service has published two Soil Surveys that cover all or parts of Jefferson County. Soil Survey:

- OR666 Trout Creek-Shaniko Area
- OR620 Upper Deschutes River Area

Source: http://www.or.nrcs.usda.gov/pnw_soil/or_data.html

Common Resource Area

A Common Resource Area (CRA) map delineates a geographical area where resource concerns, problems, or treatment needs are similar. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area.

CRA	CRA Name	CRA Description
10.11	Central Rocky and Blue Mountain Foothills - John Day-Clarno Uplands	This unit is characterized by rangeland soils on hills or mountains associated with the John Day/Clarno Formation. The dominant soils are Simas and Tub soil series. Temperature regime is mesic; moisture regime is aridic and xeric.
10.12	Central Rocky and Blue Mountain Foothills - Cool Dry Blue Mountain Foothills	This unit is characterized by rangeland soils on hills or mountains associated with basalt. The dominant soils are Searles, Redcliff, Choptie, and Madeline. Temperature regime is frigid; moisture regime is aridic. Precipitation is about 10 to 12 inches. Vegetation is dominantly Wyoming

		big sage with bluebunch wheat grass and lesser amount of Idaho fescue (cool dry climate).
10.13	Central Rocky and Blue Mountain Foothills – Madras Plains	This unit is characterized by deep soils on nearly level plateaus. Most areas are row cropped. The dominant area for this unit is the Agency Plain. The dominant soils are the Agency and Madras soil series. Surface texture is sandy loam or loam. The soils lack the strong volcanic ash influence typical of unit 10.4. Temperature regime is mesic; moisture regime is aridic.
10.14	Central Rocky and Blue Mountain Foothills - Bend-Redmond Lava Plains	This unit is characterized by moderately deep and shallow soils formed in ash from Mt. Mazama over basalt. Most areas are used for irrigated pasture or hayland. Slopes are nearly level to undulating. The dominant soils are Deschutes and Deskamp. Texture is sandy loam and loamy sand throughout the profile. Temperature regime is mesic; moisture regime is aridic.
3.4	Olympic and Cascade Mountains – Cascade Subalpine-Alpine	The Cascade Subalpine/Alpine CRA is an area of high, glaciated, volcanic peaks that rise above subalpine meadows. It is characterized by bare rock outcrop, lava flows and volcanic peaks. Elevations range from 5600 to 12000 feet. Active glaciation occurs on the highest volcanoes and decreases from north to south. The winters are very cold and the growing season is extremely short. Flora and Fauna adapted to high elevations include herbaceous and shrubby subalpine meadow vegetation and scattered patches of mountain hemlock, subalpine fir, and whitebark pine.
3.5	Olympic and Cascade Mountains - Northern Cascade Crest Montane Forest	The Cascade Crest Montane Forest CRA consists of an undulating plateau punctuated by volcanic buttes and cones that reach a maximum elevation of about 6500 feet. The CRA is extensively forested with mountain hemlock and Pacific silver fir. Temperature regime is cryic; moisture regime is udic. Although this unit has the same moisture and temperature regime as unit 3.3, it is noticeably more

		moist and the break between 3.3 and 3.5s transitional.
43C.1	Blue and Seven Devils Mountains - John Day-Clarno Highlands	<p>This unit is characterized by forested lands that are underlain by the John Day/Clarno Formation. Temperature regime is frigid; moisture regime is xeric.</p> <p>Vegetation is dominantly ponderosa pine and scattered Douglas-fir. The amount of volcanic ash on the soils is minimal. The soils are typically clayey textured with strong argillic horizons.</p>
6.7	Cascade Mountains, Eastern Slope - Grand Fir Mixed Forest	<p>This unit is not extensive in Oregon but is in Washington. The vegetation is a mix of grand fir, Douglas fir, and ponderosa pine. This unit is lower in elevation than unit 3.5. Temperature regime is frigid; moisture regime is udic with a deep annual snowpack. It is characterized by high, glaciated plateaus and mountains.</p>
6.9	<p>Cascade Mountains, Eastern Slope - Ponderosa Pine/Bitterbrush Woodland</p>	<p>This unit is characterized by undulating ash mantled lava flows. Vegetation is dominated by ponderosa pine, antelope bitterbrush and Idaho fescue. This unit lacks the dominance of lodgepole pine and the coarse pumice fragments characteristic of unit 6.1. Temperature regime is frigid; moisture regime is xeric.</p>
8.11	Columbia Plateau – Umatilla Plateau	<p>This is the major unit within the MLRA. It consists of loess mantled basalt plateaus. The soils are the moderately deep silt loam Condon and Morrow soils series. Temperature regime is mesic; moisture regime is xeric. Precipitation is about 12 to 15 inches.</p>
8.8	Columbia Plateau - Wapinitia- Simnasho Plateau	<p>This unit is characterized by loess mantled basalt plateaus. This unit only occurs west of the Deschutes Canyon on Juniper Flat south to about Lake Billy Chinook. The soils are dominantly Watama, Bakeoven, and Shear. Temperature regime is mesic; moisture regime is aridic and xeric. Precipitation is about 10 to 16 inches</p>

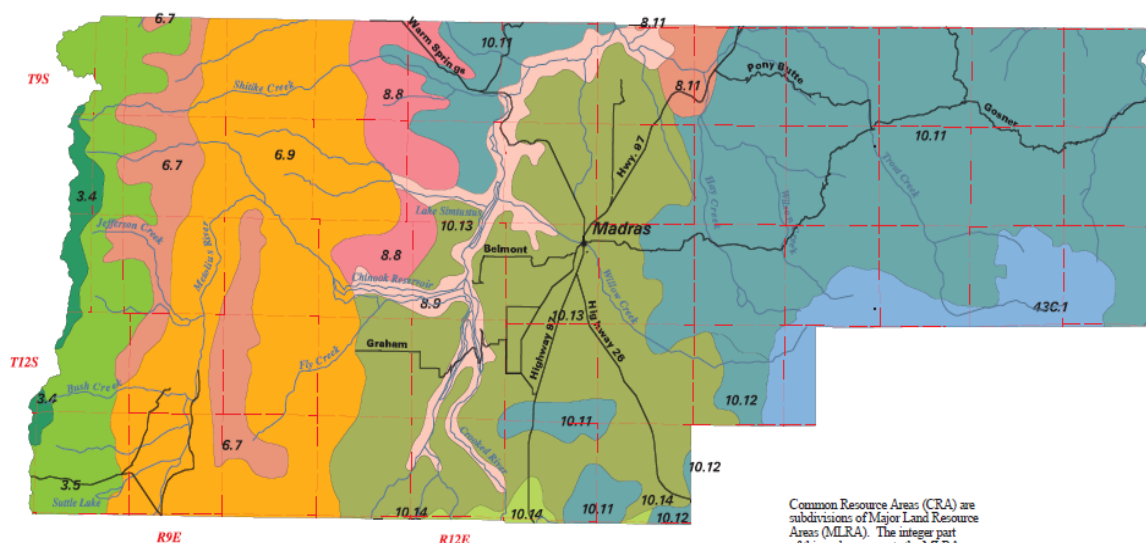
8.9	Columbia Plateau - Deschutes-John Day Canyons	This unit is characterized by the deeply dissected canyon Side slopes of the Deschutes and John Day Rivers. Soils are shallow and Rock outcrop and Rubbleland are prevalent. Temperature regime is mesic; moisture regime is aridic. Precipitation is about 9 to 14 inches.

COMMON RESOURCE AREAS Jefferson County, Oregon



LEGEND

- 10.11
- 10.12
- 10.13
- 10.14
- 3.4
- 3.5
- 43C.1
- 6.7
- 6.9
- 8.11
- 8.8
- 8.9
- Streams
- Roads
- Townships



Common Resource Areas (CRA) are subdivisions of Major Land Resource Areas (MLRA). The integer part of this code represents the MLRA. The decimal part represents the CRA. Complete descriptions of CRAs are found in the NRCS electronic Field Office Technical Guide. (eFOTG)



Source: Map produced by NRCS State Office GIS staff, Portland, Oregon, 2005.
Source scale: streams, roads and townships, 1:100,000.
Source scale: common resource areas, version 1.2 1:250,000.
This map is for general planning purposes only.

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Resource Concern: Water Quality & Quantity

Climate

Madras gets 11 inches of rain per year. Snowfall is 15 inches. The number of days with any measurable precipitation is 70. On average, there are 155 sunny days per year. The July high is around 87 degrees. The January low is 23.

Climate	Madras
Rainfall (in.	11.3
Snowfall (in.)	15.2
Precipitation Days	70
Sunny Days	155
Avg. July High	86.8
Avg. Jan. Low	22.9

Source: <http://www.bestplaces.net/climate/county/oregon/jefferson>

Precipitation in the Upper Deschutes Basin varies dramatically. The average annual precipitation is 11 inches at Madras and Bend and 24 inches at Chemult. Most of the precipitation, about 70 percent, falls during November through April. During the driest months, which are July, August, and September, the average monthly precipitation is less than 1 inch. The amount and duration of snowfall in winter is variable, but the southern part of the area receives the highest amounts for the longest duration. (Natural Resources Conservation Service, 1999)

Water Quantity

Most of Jefferson County drains to the Deschutes River. A small area at the far east side drains into the John Day River. Major water courses are Trout Creek, Willow Creek, the Deschutes River and Crooked River. The rivers and streams are influenced by the climate of the region with most of the precipitation falling in the winter and very little in the summer.

Snowmelt contributes later season water to those streams with sources at higher elevations. Peak flows tend to be higher than were present in post settlement times due to changes in such watershed characteristics as vegetative cover, road construction and channel modifications. Trout Creek, Willow Creek, Parts of the Deschutes River and the Crooked River have all been identified as water quality limited for temperature by Oregon Department of Environmental Quality. (DEQ) Trout Creek was also listed for sediment.

Almost all of the irrigation water for the more than 50,000 irrigated acres is provided by the North Unit Irrigation District. (NUID) The district was established as a Bureau of Reclamation project. The primary source is Deschutes River water that is stored in the Wickiup Reservoir. The water is released during the irrigation season and enters the NUID canal system at a diversion near Bend. Their total water diversion averages over 200 thousand ac.ft. per year

There are over 200 miles of canals in the project and losses from these canals was estimated at nearly 100,000 ac ft per year or 50%.

Most of the on farm irrigation systems have been converted to more efficient sprinkler systems replacing the older surface systems but there is still about 25% of the irrigated land that is flood irrigated.

Irrigation

Irrigation is an important aspect to agriculture in Jefferson County today. The table below is broken down by the number of irrigators and acres irrigated.

Jefferson County Agriculture Irrigated Acres and Number of Operations		
Acres & Operations	Acre Range	Units
Irrigated - Acres	2,000 Acres or More	18
Irrigated - Number of Operations	2,000 Acres or More	7,930
Irrigated - Acres	1,000 to 1,999 Acres	1,137
Irrigated - Number of Operations	1,000 to 1,999 Acres	18
Irrigated - Acres	500 to 999 Acres	37
Irrigated - Number of Operations	500 to 999 Acres	12,871
Irrigated - Acres	260 to 499 Acres	5,890
Irrigated - Number of Operations	260 to 499 Acres	28
Irrigated - Acres	220 to 259 Acres	1,129
Irrigated - Number of Operations	220 to 259 Acres	6
Irrigated - Acres	180 to 219 Acres	1,483
Irrigated - Number of Operations	180 to 219 Acres	9
Irrigated - Acres	140 to 179 Acres	3,108
Irrigated - Number of Operations	140 to 179 Acres	35
Irrigated - Acres	100 to 139 Acres	863
Irrigated - Number of Operations	100 to 139 Acres	12
Irrigated - Acres	70.0 to 99.9 Acres	1,421
Irrigated - Number of Operations	70.0 to 99.9 Acres	21
Irrigated - Acres	50.0 to 69.9 Acres	1,084

Jefferson County Agriculture Irrigated Acres and Number of Operations		
Acres & Operations	Acre Range	Units
Irrigated - Number of Operations	50.0 to 69.9 Acres	28
Irrigated - Acres	10.0 to 49.9 Acres	1,437
Irrigated - Number of Operations	10.0 to 49.9 Acres	73
Irrigated - Acres	1.0 to 9.9 Acres	98
Irrigated - Number of Operations	1.0 to 9.9 Acres	22
Irrigated - Acres	Total Acres	48,331
Irrigated - Number of Operations	Total Operations	307
Source: NASS Census Of Agriculture 2007		

Other water quality and quantity issues covering irrigated lands, water rights and irrigation districts, stream flows, groundwater and drinking water are addressed in the following 8-digit HUC watersheds within Jefferson County include:

- Lower Deschutes - 17070306
- Trout – 17070307
- Upper Deschutes – 17070301
- Lower Crooked – 17070305

Source: <http://www.or.nrcs.usda.gov/technical/watershed-resources.html>

Water Quality - 303(d)-Listed Streams

A number of stream segments in Jefferson County have been declared water quality limited by Oregon's Department of Environmental Quality (DEQ) under Section 303(d) of the Clean Water Act are listed in the Middle Deschutes Agriculture Water Quality Management Area Plan, 4th Biennial Revision, March 25, 2010. (See next page)

Water quality standards exceed standards on some streams for temperature, sedimentation, pH, dissolved oxygen, flow modification, and habitat modification. Of these, temperature, flow, and pH primarily are summer concerns. Dissolved oxygen is primarily a summer/fall concern. Exceeding these standards indicate potential problems for fish.

The table below identified the location of water quality concerns in Jefferson County. This data was taken from the Middle Deschutes Agriculture Water Quality Management Area Plan, 4th Biennial Revision, March 25, 2010.

Table 1. Location and seasonality of exceedances of Oregon's Water Quality Criteria in the Middle Deschutes Area, from DEQ's 2004/2006 303(d) list ¹ . Current information on the 303(d) list can be found at: http://www.deq.state.or.us/wq/assessment/rpt0406/search.asp .					
Stream Segment	Water Quality Parameters				
	Sediment	Temperature	pH	Dissolved Oxygen	Chlorophyll <i>a</i>
Trout Creek	X	Year-Around (non-spawning)			
Trout Creek tributaries: Auger, Big Log, Bull, Cartwright, Dick, Dutchman, & Potlud	X	Summer (rearing) and Year-Around (non-spawning)			
Trout Creek tributary: Tenuile Creeks		Summer (rearing); Oct 1 – June 30 (spawning)			
Willow Creek		Year-Around (non-spawning)			
Deschutes River (Lake Simtustus and Lake Billy Chinook)			summer		summer
Deschutes River (below Reregulation Dam)		X		X	
Crooked River		Summer (rearing)	Year-round		

A copy of these plans and progress reports can be found at http://www.oregon.gov/ODA/NRD/water_agplans.shtml#lwrdes

Resource Concern: Air and Energy

Energy

Agriculture producers have become more aware of energy as a resource concern. Energy is an issue in terms of fuel costs for agricultural operations and cost and availability of electricity for pumping irrigation water and indirect energy costs for fertilizer and chemicals. Opportunities to produce energy on-farm that did not exist previously include solar, biomass and manure.

Some of the irrigation districts in the Deschutes Basin have been working to put some of their canals into pipes. This provided the opportunity to provide gravity pressurized water to the farms to reduce the pumping needs. Small scale hydro-electric generation has also been proposed for some pipelines where flow and pressure make it feasible. The Wy'East Save Water – Save Energy program has assisted irrigators to implement energy conservation measures such as scientific irrigation scheduling and the installation of variable speed drives for pumps. This saves irrigators approximately 10 to 20 on water and energy pumped.

Utilities serving Jefferson County include Central Electric Cooperative and Pacific Power and Light. Both utilities have energy efficiency and conservation program targeted at agriculture energy.

The NRCS policy has recently recognized energy as a resource concern:

- (1) Improving the efficiency of energy use;
- (2) Conserving energy;
- (3) Producing renewable energy;
- (4) Producing biomass energy feed-stocks in a sustainable manner.

Air resource concerns are intermittent field burning and forest fire smoke.

Resource Concern Plants & Animals

Rangeland

Expansion of **western juniper on rangeland** is a significant issue. A study in 1988 showed that there were over 350 thousand acres in the county with junipers with 90 thousand on private land. the same study estimated a 3 fold increase in land with junipers since 1936. Much of this is areas where juniper is increasing beyond its normal range and density. As juniper increases, native shrubs and eventually grasses are declining. They are replaced by invading weeds and annual grasses or in extreme situations, bare soil. This not only reduces forage available for livestock and wildlife, it also can increase erosion, increase sediment delivery to streams and reduce groundwater recharge for streams and springs. The diversity of the plant community decreases dramatically with the loss of shrubs and native grasses. Wildlife that are dependent on the more open shrub/ bunchgrass community will lose their habitat. Sage grouse are a species that has been identified as particularly affected by this change in habitat due to loss of sage brush and increase of perching sites for predators.

The deteriorated range plant community impacts other resource concerns:

- Reduced connectivity between habitats and wildlife populations.
- Reduced ability of uplands to retain and slowly release runoff and maintain soil stability.
- Loss of riparian and floodplain function reduces habitat complexity and diversity and contributes to extreme seasonal stream flows and temperatures.

Riparian / Buffer

Fish production in most of the subbasin is limited by water quality and quantity. Habitat problems identified as limiting threatened and endangered anadromous fish production in the tributary streams. Resource issues include low stream flow, unstable stream banks, inadequate stream shading, shallow pools, elevated water temperature, low amount of pool habitat, and gravel impacted by fine sediment.

Stream channel degradation is common. The cause is due in part to over 100 years of livestock impacts on riparian vegetation in combination with damaging flood events, has resulted in the habitat problems we see today. Wide, shallow channels, lack of pools and lack of healthy riparian plant communities, particularly the shortage of the woody component, all contribute to the water quality and quantity problems. These problems can be solved with riparian buffer systems.

The Conservation Reserve Enhancement Program (CREP) and Conservation Reserve Program (CRP) continuous sign-up offer an opportunity to create riparian buffer systems and directly address these water quality and habitat limitations.

Noxious Weeds

Noxious and invasive plants are a problem, mostly on range land and unfarmed areas. Thistles, the knapweeds, white top, kochia and dalmation toadflax are all know to be present along with

many other plants. Annual grasses such as cheatgrass and Medusa head Rye are also problems on rangeland.

Animals

A significant animal related resource concern centers on threatened and endangered and sensitive fish species. The Deschutes River is home to fall chinook, summer steelhead, bull trout and resident rainbow “redband” trout. All of these species are sensitive to water quality and are the basis for the water quality listings of those listed streams. They need clean, cool water with pools and good stream habitat structure and vegetation to thrive. Whychus Creek, Trout Creek, Willow Creek and the Crooked River are all tributaries listed as water quality limited. Recent improvements at the Pelton Dam complex, below the confluence of the Crooked River, have made the reintroduction of anadromous fish feasible. Suitable habitat above the dams for migratory fish like steelhead and salmon may now be available for population recovery.

Confined Animal Feeding Operations

Only two Confined Animal Feeding Operations (CAFOs) are located in Jefferson County.

Threatened and Endangered Species

Threatened and Endangered Species are found in the NRCS Field Office Technical Guide.

Section 3 Natural Resources Progress Analysis

This section looks at where conservation partners are focusing their efforts, what overall conservation progress has been made in the county during from 2006 – 2010 by the conservation partners and NRCS. While resource concerns have been addressed by the application of conservation applied on the ground, this section addresses resource concerns that need to be addressed in the future. Finally, an analysis will be made as to where NRCS should invest conservation program incentives in future years.

Conservation Practices Applied 2006 - 2010

NRCS invested about 1.6 million dollars through its Environmental Quality Incentives Program (EQIP) in the last 5 years. A large portion of that was used to make improvements to on farm irrigation systems with mainlines, sprinkler and drip systems. Program cost shares were also used for some range improvement projects with fences and livestock water developments. Recently there has been an effort to prioritize irrigation projects in those areas where there is a multiagency focus on laterals that would be converted from canals to pressurized pipe.

Integrated Data Enterprise Analysis

The NRCS integrated Data Enterprise Analysis (IDEA) provides a summary of practices planned or applied in Jefferson County from 2006 through 2010. This data is used for workload planning, progress tracking, trends, management reviews, and quality assurance.

Pr. Code	Practice Name	Pr. Unit	Land Unit Acres	Applied Amount	Applied Count	Soil	Water	Animal	Plants	Air	Energy
314	Brush Management	ac	3130.5	124	4	x	x	x	x		
327	Conservation Cover	ac	10,522.80	10576	191	x	x		x		x
328	Conservation Crop Rotation	ac	5,862.80	5697	197	x	x		x		x
329	Residue and Tillage Management, No-Till/Strip Till/Direct Seed	ac	51.4	51	1	x	x		x	x	
329B	Residue Management, Mulch Till	ac	121.4	121	2	x	x		x	x	
342	Critical Area Planting	ac	400	5	1	x	x	x	x		
344	Residue Management, Seasonal	ac	312.5	313	13	x	x		x		x
345	Residue and Tillage Management, Mulch Till	ac	462.7	336	14	x	x		x		x
378	Pond	no	735.3	5	4		x	x			x
382	Fence	ft	10055.8	176387	28		x	x			
391	Riparian Forest Buffer	ac	183.2	183	17	x	x	x	x		
394	Firebreak	ft	172.3	1816	4				x	x	
395	Stream Habitat Improvement and Management	ac	425.5	55	2		x	x			
396	Aquatic Organism Passage	mi	525.5	8	2		x	x			
430AA	Irrigation Water Conveyance, Pipeline, Aluminum Tubing	ft	45.7	700	1		x		x		x
430DD	Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	ft	259.5	2180	1		x		x		x
441	Irrigation System, Micro	ac	1141.9	968	37		x		x		x
442	Irrigation System, Sprinkler	ac	2150.5	1782	60		x		x		x
443	Irrigation System, Surface and Subsurface	ac	34.4	2	2		x		x		x
449	Irrigation Water Management	ac	2364.8	2293	71		x		x		x
472	Access Control	ac	5013.6	5014	99				x		
490	Tree/Shrub Site Preparation	ac	263.8	264	1	x			x		
511	Forage Harvest Management	ac	377.6	429	9				x		
512	Forage and Biomass Planting	ac	40.3	40	1	x			x		x
516	Pipeline	ft	4935.4	11880	7			x	x		x
528A	Prescribed Grazing	ac	71439.3	74016	30	x	x	x	x		
533	Pumping Plant	no	359.8	7	5	x	x		x		x
550	Range Planting	ac	2,356.00	25	2	x		x	x	x	
574	Spring Development	no	4.00	4	3		x	x	x		
580	Streambank and Shoreline Protection	ft	425.5	1100	2	x	x	x	x		
582	Open Channel	ft	25.5	20000	1		x				
587	Structure for Water Control	no	1102.3	270	30		x				
590	Nutrient Management	ac	707.8	726	15	x	x		x		x
595	Integrated Pest Management	ac	5892.8	5891	115		x		x	x	x
612	Tree/Shrub Establishment	ac	400	5	1						x
614	Watering Facility	no	5790.7	18	10		x	x			
645	Upland Wildlife Habitat Management	ac	27672.6	31193	258			x			
666	Forest Stand Improvement	ac	7,746.60	1330	5	x	x	x	x	x	x
776	Irrigation Water Conveyance, On-Ground Aluminum Pipeline	ft	45.7	2880	2		x		x		x
CCIA	Conservation Completion Incentive First Year	no	1344.8	8	8	x	x	x	x	x	x

Partner Conservation Activities

The **Jefferson County SWCD** is very active in promoting and assisting conservation efforts on private agricultural land. In the past several years they have used **Oregon Watershed Enhancement Board (OWEB)** funds to help on irrigation improvement projects such as drip systems, tailwater recovery and buried mainlines. They have been working with the **North Unit Irrigation District (NUID)** to find funding to help them replace some of their miles of open irrigation canals with buried, pressurized pipe. They have also been doing water quality monitoring in Mud Springs and other streams. **Bonneville Power Administration** provides funding for restoration work in the Trout Creek watershed. The **Willow Creek and Trout Creek Watershed Councils** have recently combined into the **Middle Deschutes Watershed Council** to assist landowners with restoration projects and to outreach and education. **Wy'East RC&D and Central Electric Cooperative** through their Save Water – Save Energy program have applied scientific irrigation scheduling on 2,000 acres in the North Unit Irrigation District. The Deschutes River Conservancy (DRC) was formed to restore streamflow and improve water quality. They have worked with irrigation district to pipe open ditches allowing the conserved water to be used for instream flow. The DRC administers and staffs the Deschutes Water Alliance Water Bank as well as a separate Groundwater Mitigation Bank where you can obtain temporary mitigation credits through the Instream Leasing Program. Conservation activity in Jefferson County is the result of a cooperative effort by the Natural Resources Conservation Service (NRCS), and its conservation partners.

NRCS Future Conservation Program Investment

Historically Jefferson NRCS has made funding investments based on funding allocation awarded from NRCS Oregon State Office. Given the demand for conservation program funding and the need to better demonstrate results, NRCS has moved to a system of Conservation Implementation Strategies to focus efforts and funds on specific resource concerns and/or areas. In 2010 and 2011 the focus was on plans that converted flood irrigation to sprinkler systems with priority given to farms served by NUID lateral 58-9.

The Implementation strategy proposed for 2013-2014 will make irrigation efficiency improvements on land served by NUID's lateral 58-11 the highest priority. Some work may also be done in the Agency Plains area where irrigation runoff is adding to water quality problems in the Deschutes. In 2014, the North Agency Plains area was made a separate implementation strategy to allow better prioritization of potential projects.

Oregon NRCS offers 26 programs that include Financial Assistance Programs, Grant Programs, Stewardship Programs, Easement Programs, and Conservation Technical Assistance Programs.

The specific programs include:

Environmental Quality Incentives Program (EQIP) - Voluntary financial and technical assistance for structural and management conservation practices on working agricultural lands.

EQIP Organic Initiative - Special EQIP funding is available to organic growers that are certified organic, transitioning organic or those who make under \$5,000 of gross organic product farm sales.

EQIP Agricultural Water Enhancement Program (AWEP) - A program under the Environmental Quality Incentives Program (EQIP) through which NRCS may enter into partnership agreements with eligible entities to conserve ground and surface water and/or improve water quality in a priority area or region. This was replaced in the 2014 farm bill with the **Regional Conservation Partnership Program (RCPP)** that could also include use of other farm bill programs as funding sources.

Conservation Stewardship Program (CStP) (2008 Farm Bill)- Voluntary program that encourages producers to address resource concerns in a comprehensive manner by undertaking additional conservation activities and improving, maintaining, and managing existing conservation activities.

Conservation Reserve Program (CRP) - Administered by the Farms Service Agency (FSA), it is a program that encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to permanent vegetative cover.

Projected future investments for NRCS conservation programs is estimated to be \$910,000

NRCS Conservation Programs	Investment 2011 - 2016
Environmental Quality Incentives Program (EQIP)	\$700,000
EQIP Organic Initiative	\$110,000
EQIP Agricultural Water Enhancement Program (AWEP)	
Conservation Stewardship Program (CStP)	\$100,000
Wildlife Incentive Program	0
Conservation Reserve Enhancement Program	0
Total	\$910,000

Section 4: Prioritization of Natural Resource Problems and Solutions

Resource Concerns That Need To Be Addressed

There is still almost 25% of **the irrigated land** that is using inefficient flood irrigation systems. The loss of water from the North Unit Irrigation District (NUID) delivery system is an ongoing problem that will require a large investment and some time to fix. There has been little attention paid to the **rangeland health** problems in the recent past. Juniper and invasive plants are increasing on what is the largest land use in the county impacting the productivity, **wildlife benefits** and ability to capture store and safely release the water to the rivers and streams.

Grazing management can be improved on many of the ranches with facilitating practices such as water developments and cross fences.

In Section 4, three areas of resource concern were identified as the primary focus for conservation work in Jefferson County over the next five years.

In prioritizing the resource concerns the following questions have been asked:

- Does the resource concern support the NRCS vision and mission.
- What is the capability of the field office and partners to achieve identified goals?
- What are the values and expectations of the Conservation District and Local Work Group?
- Does the cost to implement the projects feasible with the amount of funding that can be leveraged by NRCS and partners?
- What legislation and regulations impact the resource concerns identified?

Decision Making Process. In 2010, NRCS held special Local Work Group meetings called Strategic Conservation Community Meetings to provide a forum for the development of partnerships and identify opportunities to strategically invest to effectively solve natural resource problems in Jefferson County. The desired outcome was to identify natural resource problems, set priorities, and determine desired future outcomes.

Annual Local Work Group meetings were held in 2012, 2013 and 2014 to gain additional input and see if new issues and priorities had surfaced. The issues identified that were within the scope of the NRCS mission were very similar to the 2010 discussion.

The Jefferson County Local Work Group has prioritized the county resource concerns as follows:

Priority 1: Major Resource Water Quantity and Quality

What is the severity of the problem? Jefferson County encompasses 1,215 irrigation operations on 37,821 acres of irrigated agricultural lands, of which nearly 75 percent are using updated sprinkler irrigation systems. About 12,000 acres are still using outdated systems or flood irrigation and need to be converted to more efficient systems. The irrigation is necessary for the agriculturalists of Jefferson County to produce healthy crops. However, the aging infrastructure and canal delivery systems create irrigation runoff that impacts water quality by putting sediment and nutrients into the streams, endangering fish habitat.

Producers in Jefferson County have younger water rights than surrounding areas, which creates more of a need to practice water conservation. High value crops grown in the county cannot risk failure from water mistakes. Funding may be an issue with the remaining flood irrigated landowners in the county. Irrigation water conveyance, sprinkler systems, and pumping plants are expensive modifications for individual landowners. The conversion of canals to pressurized pipes needed by the irrigation districts is costly as well. Where pressurized water is not

available, the costs of developing access to electricity and the electricity for pumping is another disincentive to converting to sprinkler irrigation.

Energy efficiency can be made through the use of scientific irrigation scheduling or intensive irrigation water management. This requires an investment in technology to monitor soil moisture and apply the right amount of water at the right time. Also, the use of variable speed drives on electrical pumps can achieve significant energy efficiency benefits.

The irrigation districts are putting much time and funding into the conversion of canals to pipelines and usually cannot work on individual landowners' on farm irrigation systems, demanding a need for help from the NRCS and other partners.

Who is willing to help with this resource concern? The Soil and Water Conservation District, Oregon Department of Agriculture, Oregon Watershed Enhancement Board, North Unit Irrigation District, Trout Creek Watershed Council, Central Oregon Electric Cooperative, Bonneville Power Association, Wy'East RC&D, USDI Bureau of Reclamation and the Deschutes River Conservancy are all partners with the NRCS to help increase irrigation efficiency and water quality.

Crop producers and citizens of the county are willing to participate in this effort as water conservation and adequate water quality and quantity is essential to everyone. When pumping irrigation water significant savings in energy efficiency can be achieved with management and updated technology.

Priority 2: Major Resource Degraded Plant Condition: Rangeland

What is the severity of the problem? Landowners county wide are willing to participate in this effort as invasive species diminish the grazing capability, decrease stream quality, and destroy wildlife habitat.

Of the 461,000 acres of privately owned land, over 100,000 acres are experiencing declining rangeland health from the expansion or increased density of Juniper. Rangeland health is deteriorating in Jefferson County, mainly due to the invasive species problem. Bunchgrass and sagebrush are being overrun by Juniper, which is detrimental to the health of the rangeland and inhibits productivity of wildlife and fish habitats. It is proven that Juniper trees can affect the hydrologic function of rangeland and that controlling Juniper can immediately improve sage grouse habitat, along with other types of wildlife and livestock habitats. Annual grasses such as cheatgrass and medusa head and other noxious and invasive weeds also impact livestock production, habitat and watershed function. The Trout Creek and Willow Creek watersheds have especially been in need for rangeland restoration work to increase sustainability and plant health and vigor.

Juniper and invasive species are increasing on what is the largest land use in the county, impacting productivity, wildlife benefits, and the ability to capture, store, and safely release water to rivers and streams. Grazing management can be improved on many of the ranches with facilitating practices such as water developments and cross fences.

While the problem is increasing, little work is being done by NRCS to mitigate the expansion. Juniper is the most visible problem but other noxious weeds and invasive species are also a concern. Annual grasses such as cheatgrass and medusahead alter the fire regime and displace native grasses and forbs. Noxious weeds can be toxic to livestock or reduce productivity for livestock and habitat for wildlife.

There is a high demand for efforts to focus on the rangeland health and conservation districts are continually working on it. Riparian habitats also need improvement; reducing Juniper will hopefully help the riparian habitat as well.

Resource Trends. Efforts in the Trout Creek watershed are proving affective and decreasing the problem where work has been done. The uplands, however, are getting worse due to the expanding Juniper and other invasive plants. Overall, the problem is continuing to increase as more available funds are being allocated to water issues than rangeland. The rangeland health has deteriorated to the extent that it is hard to predict when the problem could be resolved and if that is a feasible expectation.

Who is willing to help with this resource concern? The Jefferson County Soil and Water Conservation District, Oregon Department of Agriculture, Oregon Watershed Enhancement Board, Bureau of Land Management, and the Oregon State University-Extension are all possible contributors to work independently or in conjunction with the NRCS on this project. Partners are on-board depending upon program compatibility and may be willing to contribute depending upon funding opportunities. Success will be measured by anecdotal evidence from the landowner and the number of applied EQIP contracts for rangeland health.

Priority 3: Major Resource Degraded Plant Condition: Forestland

What is the severity of the problem? Overstocked forest stands on both private and public lands are reducing forest health and increasing the risk of catastrophic fire events. Stands need to be thinned and the wild land/ urban interface should be the first focus area. Areas of juniper encroachment could also be important. Indicators of success will be anecdotal from landowners until the Oregon Department of Forestry can do a survey of the health of the stands.

Who is willing to help with this resource concern? The Jefferson Soil and Water Conservation District, WyEast RC&D, Farm Service Agency, Oregon State University-County Extension Service, Oregon Department of Fish and Wildlife, Oregon Department of Forestry, Oregon Department of Agriculture, United States Forest Service, Environmental Protection Agency, Department of Environmental Quality, National Oceanic Atmospheric Administration, and the United States Fish and Wildlife Services are all possible partners to help the NRCS with the forest health concern.

Resource Trends: Demand is unknown but fire risk is a serious concern and a motivator to work to improve forest health. Several major wildfires in the recent past have come close to developed areas leading to evacuations but fortunately not homes lost. The Oregon Department of Forestry has been providing assistance to forest land owners to thin forest stands and implement other measures to reduce fire risk, especially around the interface between wild lands and urban or developed lands.

Additional resources need to be applied to the forest health issue to address the risk of wildfire and ecological problems from overstocked, unhealthy stands. Restoration of burned forest is also an unmet need where tree planting and erosion control measures could be used to help prevent further damage to watersheds. The Oregon Department of Forestry needs to distinguish areas that are high priority for treatment. A state forester is working to get stewardship plans in place and will be a main venue for outreach.

Who is willing to help with this resource concern? The Jefferson Soil and Water Conservation District, Watershed Councils, WyEast RC&D, Farm Service Agency, Oregon State University-County Extension Service, Oregon Department of Fish and Wildlife, Oregon Department of Forestry, Oregon Department of Agriculture, Oregon Water Resources Department, United States Forest Service, National Oceanic Atmospheric Administration, and the United States Fish and Wildlife Services are all possible partners to help the NRCS with the forest health concern. Partners are on-board depending upon program compatibility and may be willing to contribute depending upon funding opportunities. Success will be measured by the number of applied EQIP contracts and future feedback from landowners, Oregon Department of Forestry, and NRCS foresters.

Section 5: Natural Resource Problems and Desired Future Outcomes

"Our goal is not just a sustainable, nutritious, abundant food supply, but also thriving ecosystems that support a diversity of life. In the next century, NRCS will not only continue to tackle familiar challenges like ensuring clean water and healthy soil, but will also rise to meet new issues, such as clean air, clean energy, climate change, and new technology."

--Chief Dave White

This section provide a roadmap that guiding the specific direction to address major resource concerns for the next five years. To describe a successful desired future condition (goal) that communicates an intended results. Well written goals, objectives and strategies are written to describe intended results. These characteristics are as follows:

SET SMART GOALS

When setting goals, they should be:

- S** = specific
- M** = measurable
- A** = attainable
- R** = realistic
- T** = trackable over a specific time period.

- Specific actions the field office will attribute to the conservation programs.
- A measurable amount of change. For example, the number of acres a conservation cropping system was applied.
- Attainable results that are ambitious.
- Realistic prediction of the expected change from the present condition should be significant, while being realistic about the extent of change.
- Trackable over time; the next five years.

ⁱ The Jefferson Local Work Group has prioritized the county resource concerns as follows:

Major Resource Concern: Water Supply and Quality

Desired Future Condition (Goal) Water resources quality and quantity water acceptable for its intended uses and managed in a efficient and sustainable manner.

Objective / Outcome describes what the specific impact of the technical and financial assistance and the degree to which that impact must occur:

Target Audience: Irrigators and other landowners

Specific Action:

- Improve stream quality by reducing tail water runoff and leaching caused by over irrigation.
- Improve irrigation efficiency on 12,000 acres of remaining flood irrigation converted to efficient irrigation systems.
- Increase the efficiency of water used on irrigated ground by adopting scientific irrigation scheduling or intensive irrigation water management. This also increases energy efficiency.
- Prevent harmful temperatures in streams by restoration of riparian forest buffers.

Measurable:

- Irrigation water management efficiency is increased by 10 to 20 % on 2,500 acres.
- Water temperatures in streams meet habitat requirements for salmonids.
- In five years, 5,000 of the acres needing more efficient irrigation systems should be updated. At a rate of about 1,000 acres per year, it will take 12 years to complete the entire project of 12,000 acres.

Partner contribution. Potential organizations that may be willing to engage in cooperative conservation includes the conservation district, irrigation districts, Watershed Councils and other non-profit organizations with a conservation mission. To reach the goal, the NRCS and major partners such as the irrigation and conservation districts must continue to focus their efforts and funding on the same target goal. Continued outreach is also needed.

Identified Focus Areas:

The Mud Springs-NUID Irrigation Conservation Implementation Strategy has been approved for funding from 2013-2015 to help with on farm irrigation improvements in coordination with North Unit Irrigation District's canal piping project on lateral 58-11. NUID has obtained funds for phase 1 of their pipeline. This project is a continuation of the work done by NRCS, NUID and other partners on lateral 58-9 which was successfully completed in 2012.

Jefferson SWCD and NRCS have begun working with landowners in the Rattlesnake drainage on Agency Plains to reduce irrigation runoff that impacts the Deschutes River below the Pelton dams. The North Agency Plains Implementation Strategy was approved in 2014 to further this effort with access to EQIP funds. The SWCD received a grant to do an analysis of where and how irrigation efficiency can be improved and runoff reduced.

There is also an ongoing feasibility study sponsored by JSWCD and Oregon Department of Water Resources to assess potential water savings and runoff reduction in the North Juniper Butte area served by Lateral 54. It could lead to a future effort to pipe the NUID canal and help with on farm systems, reducing water withdrawals and runoff to the Crooked River.

Major Resource Degraded Plant Condition: Rangeland

Desired Future Condition (Goal) The desired future condition are healthy grazing lands capable of sustained use to produce food and fiber, clean water, healthy fish and wildlife populations and social and economic stability. This condition covers rangeland, forage cropland, and grazed forest land.

Objective / Outcome describes what the specific impact of the technical and financial assistance and the degree to which that impact must occur.

Target Audience: Ranchers.

Specific Action :

- Apply range management practices that improves the specific Ecological Site Condition of native plants.
- Apply grazing management systems that achieve livestock distribution.
- Sufficient water of acceptable quality is provided and adequately distributed to meet production goals for livestock and wildlife
- Control noxious and invasive plants to minimize their spread.

- Threatened and endangered plant species and/or habits they occupy are managed to avoid actions that would reduce their current population, healthy or sustainability.
- Working lands and water provide habitat for diverse and healthy wildlife aquatic species, and plant communities.
- Fish and wildlife riparian habitat and shelter types support the necessary plant species in the kinds, amounts, and physical structure. The connectivity of fish and wildlife cover is adequate to support overtime the species of concern.

Measurable: By 2016 ranchers will apply prescribed grazing practices on 7,000 acres.

Partner contribution. Potential organizations that may be willing to engage in cooperative conservation includes the conservation district, irrigation districts, Watershed Councils and other non-profit organizations with a conservation mission.

Major Resource Degraded Plant Condition: Forests

Overstocked forest stands on both private and public lands are reducing forest health and increasing the risk of catastrophic fire events. Stands need to be thinned and the wildland urban interface should be the first focus area. Areas of juniper encroachment needs treatment.

Desired Future Condition (Goal). Forest landowners will apply management that will maintain or improve long-term vegetative conditions grazing and forestland.

Objective / Outcome: describes what the specific impact of the technical and financial assistance and the degree to which that impact must occur.

Target Audience: Forest landowners.

Specific Action:

- Reduce fuel loading to minimize incidence of wildfire.
- Forest lands are managed to remove the risk of catastrophic fire events around the wild land urban interface with Forest Stand Improvements (666) and Firebreaks (394).
- The Upper Deschutes Tri county Forest Health conservation implementation strategy has been selected for funding by the Oregon NRCS leadership to do Forest health and fire risk reduction projects in priority areas

Measurable: By 2016 forest landowners apply Forest Stand Improvements and Firebreaks practices on 200 acres.

Partner contribution. Potential organizations that may be willing to engage in cooperative conservation includes the conservation district, Oregon Department of Forestry, Watershed Councils and other non-profit organizations with a conservation mission.

Major Resource Concern: Inefficient Energy Use & Air Quality Impacts

The **desired future condition** to expand on-farm energy conservation and renewable energy production and use. Agriculture makes a positive contribution to local air quality and efforts to sequester carbon.

Objective / Outcome: describes what the specific impact of the technical and financial assistance and the degree to which that impact must occur.

Target Audience: Farmers, ranchers and other landowners..

Specific Action: Implement Agriculture Energy Management Plan - Landscape Criteria (124) on 2 operations. A Landscape Agricultural Energy Management Plan (Landscape AgEMP) contains the strategy by which the producer will explore and address his/her on-farm energy problems and opportunities on the working land. This plan will enable agriculture producers to integrate energy concerns into field office planning assistance and programs to take advantage of public and private utility agriculture energy conservation programs.

Measurable: By 2016 agriculture producers will develop an Agriculture Energy Management Plan - Landscape Criteria Practice/Activity Code (124) with 2 producers.

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